[0062] What is claimed as new and desired to be protected by Letters Patent of the United States is:

1. A method of fabricating a memory element comprising the steps of:

forming a first conductor over a substrate;

forming a pinned magnetic structure over and electrically connected with said first conductor;

forming a nonmagnetic layer over said pinned magnetic structure;

forming a sensing magnetic structure over said nonmagnetic layer, said sensing structure including an antiferromagnetic layer magnetically connected to at least one ferromagnetic free layer to provide a magnetic bias to said at least one free ferromagnetic layer; and

forming a second conductor over and electrically connected with said sensing structure.

2. The method of claim 1 wherein said antiferromagnetic layer is selected from the group consisting of IrMn, FeMn, NiMn, PtMn, NiO, and CoNiO.

3. The method of claim 1 wherein said antiferromagnetic layer comprises one or more synthetic layers each having two ferromagnetic layers separated by a metal.

4. The method of claim 1 wherein said antiferromagnetic layer is formed to a thickness of less than about 70 Angstroms.

5. The method of claim 4 wherein said pinned structure is formed of a plurality of layers including at least one pinned layer.

6. The method of claim 1 wherein said nonmagnetic layer comprises aluminum oxide.

7. The method of claim 1 wherein said bias is applied to said ferromagnetic free layer utilizing said antiferromagnetic layer.

8. The method of claim 7 wherein said bias allows an exchange field between said ferromagnetic free layer and said antiferromagnetic layer to be less than a shape dependent coercivity of said element.

9. A method of fabricating a memory element comprising the steps of:

forming a first pinned magnetic structure over a conductive layer;

forming a nonmagnetic layer over said first pinned magnetic structure;

forming a second free magnetic structure over said nonmagnetic layer, wherein said second free magnetic structure comprises an antiferromagnetic layer overlying a ferromagnetic free layer and applying a magnetic bias thereto; and

patterning said first pinned magnetic structure, nonmagnetic layer and second free magnetic structure to form said memory element.

10. The method of claim 9 wherein said antiferromagnetic layer is selected from the group consisting of IrMn, FeMn, NiMn, PtMn, NiO, and CoNiO.

11. The method of claim 9 wherein said antiferromagnetic layer includes one or more synthetic layers each having two ferromagnetic layers separated by a metal.

12. The method of claim 9 wherein said antiferromagnetic layer is formed to a thickness of less than about 70 Angstroms.

13. The method of claim 9 wherein said second free magnetic structure comprises a plurality of layers including at least one sense layer.

14. The method of claim 9 wherein said first pinned magnetic structure comprises a plurality of layers including at least one pinned layer.

15. The method of claim 9 wherein said nonmagnetic layer comprises aluminum oxide.

16. The method of claim 9 wherein said bias is applied to said ferromagnetic free layer using said antiferromagnetic layer.

17. The method of claim 16 wherein said bias allows an exchange field between said ferromagnetic free layer and said antiferromagnetic layer to be less than a shape dependent coercivity of said element.

18. A memory element structure comprising:

a first conductor overlying a substrate;

a pinned magnetic structure overlying and electrically connected with said first conductor;

a nonmagnetic layer overlying said pinned magnetic structure;

a sensing magnetic structure overlying said nonmagnetic layer, said sensing magnetic structure including an antiferromagnetic layer magnetically coupled to at least one ferromagnetic free layer producing a magnetic bias to said at least one free layer; and

a second conductor overlying and electrically connected with said sensing magnetic structure.

19. The structure of claim 18 wherein said antiferromagnetic layer is selected from the group consisting of IrMn, FeMn, NiMn, PtMn, NiO, and CoNiO.

20. The structure of claim 18 wherein said antiferromagnetic layer includes one or more synthetic layers each comprising two ferromagnetic layers separated by a metal.

21. The structure of claim 18 wherein said antiferromagnetic layer is formed to a thickness of less than about 70 Angstroms.

22. The structure of claim 18 wherein said pinned magnetic structure comprises a plurality of layers including at least one pinned layer.

23. The structure of claim 18 wherein said nonmagnetic layer comprises aluminum oxide.

24. The structure of claim 18 wherein said antiferromagnetic layer provides said bias to said ferromagnetic free layer.

25. The structure of claim 24 having an exchange field between said ferromagnetic free layer and said antiferromagnetic layer that is less than a shape dependent coercivity of said element.

26. A memory element structure comprising:

a first pinned magnetic structure overlying a conductive layer;

a nonmagnetic layer overlying said first pinned magnetic structure;

a second free magnetic structure overlying said nonmagnetic layer, wherein said second free magnetic structure comprises an antiferromagnetic layer overlying a ferromagnetic free layer said ferromagnetic free layer having a bias applied thereto; and

said first pinned magnetic structure, nonmagnetic layer and second free magnetic structures patterned to form said memory element.

27. The structure of claim 26 wherein said antiferromagnetic layer is selected from the group consisting of IrMn, FeMn, NiMn, PtMn, NiO, and CoNiO.

28. The structure of claim 26 wherein said antiferromagnetic layer comprises one or more synthetic layers each having two ferromagnetic layers separated by a metal.

29. The structure of claim 26 wherein said antiferromagnetic layer is formed to a thickness of less than about 70 Angstroms.

30. The structure of claim 26 wherein said second free magnetic structure includes at least one sense layer.

31. The structure of claim 26 wherein said first pinned magnetic structure includes at least one pinned layer.

32. The structure of claim 26 wherein said nonmagnetic layer comprises aluminum oxide.

33. The structure of claim 26 wherein said bias is provided by said antiferromagnetic layer.

34. The structure of claim 33 having an exchange field between said ferromagnetic free layer and said antiferromagnetic layer that is less than a shape dependent coercivity of said element.

35. A memory device comprising:

at least one magnetic random access memory element, said magnetic random access memory element comprising:

a first pinned magnetic structure overlying a conductive layer;

a nonmagnetic layer overlying said first pinned magnetic structure;

a second free magnetic structure overlying said nonmagnetic layer, wherein said second free magnetic structure comprises an antiferromagnetic layer overlying a ferromagnetic free layer said ferromagnetic free layer having a bias applied thereto; and

said first pinned magnetic structure, nonmagnetic layer and second free magnetic structures patterned to form said memory element.

36. The device of claim 35 wherein said antiferromagnetic layer is selected from the group consisting of IrMn, FeMn, NiMn, PtMn, NiO, and CoNiO.

37. The device of claim 35 wherein said antiferromagnetic layer comprises one or more synthetic layers each having two ferromagnetic layers separated by a metal.

38. The device of claim 35 wherein said antiferromagnetic layer is formed to a thickness of less than about 70 Angstroms.

39. The device of claim 35 wherein said second free magnetic structure includes at least one sense layer.

40. The device of claim 35 wherein said first pinned magnetic structure includes at least one pinned layer.

41. The device of claim 35 wherein said nonmagnetic layer comprises aluminum oxide.

42. The device of claim 35 wherein said bias is provided by said antiferromagnetic layer.

43. The device of claim 42 having an exchange field between said ferromagnetic free layer and said antiferromagnetic layer that is less than a shape dependent coercivity of said element.

44. A processor-based system, comprising:

a processor; and

an integrated circuit coupled to said processor, said integrated circuit including a plurality of magnetic random access memory elements, each of said magnetic random access memory elements comprising:

a first pinned magnetic structure overlying a conductive layer;

a nonmagnetic layer overlying said first pinned magnetic structure;

a second free magnetic structure overlying said nonmagnetic layer, wherein said second free magnetic structure comprises an antiferromagnetic layer overlying a ferromagnetic free layer said ferromagnetic free layer having a bias applied thereto; and

said first pinned magnetic structure, nonmagnetic layer and second free magnetic structures patterned to form said memory element.

45. The system of claim 44 wherein said antiferromagnetic layer is selected from the group consisting of IrMn, FeMn, NiMn, PtMn, NiO, and CoNiO.

46. The system of claim 44 wherein said antiferromagnetic layer comprises one or more synthetic layers each having two ferromagnetic layers separated by a metal.

47. The system of claim 44 wherein said antiferromagnetic layer is formed to a thickness of less than about 70 Angstroms.

48. The system of claim 44 wherein said second free magnetic structure includes at least one sense layer.

49. The system of claim 44 wherein said first pinned magnetic structure includes at least one pinned layer.

50. The system of claim 44 wherein said nonmagnetic layer comprises aluminum oxide.

51. The system of claim 44 wherein said bias is provided by said antiferromagnetic layer.

52. The structure of claim 51 having an exchange field between said ferromagnetic free layer and said antiferromagnetic layer that is less than a shape dependent coercivity of said element.